Charge Transport and Recombination in Organic-Semiconductor Diodes

Wetzelaer, Gert-Jan

Stellingen

behorende bij het proefschrift

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door Gert-Jan Wetzelaer

1. The ideality factor of the current and light output of organic light-emitting diodes can be used to distinguish between bimolecular and trap-assisted charge-carrier recombination. (*Chapter 3*)

2. Nonradiative trap-assisted recombination is present in polymer light-emitting diodes. (*Chapter 3*)

3. Similar to the case of bimolecular recombination, the trap-assisted recombination rate is proportional to the charge-carrier mobility. (*Chapter 4*)

4. The Einstein relation between the mobility and diffusivity in organic semiconductors is not violated in thermal (quasi)equilibrium. (*Chapter 5*)

5. An above-unity ideality factor of the dark current of an organic solar cell does not necessarily indicate the presence of trap-assisted recombination. (*Chapter 6*)

6. The bimolecular-recombination rate in organic bulk-heterojunction solar cells can be determined by combining current-voltage measurements on double- and single-carrier devices of the donor-acceptor blend. (*Chapter 7*)

7. Charge-transfer state electroluminescence can shed light on the nature of charge-carrier recombination in organic solar cells. (*Chapter 8*)

8. Negative or zero values cannot be plotted correctly on log charts. Only positive values can be interpreted on a logarithmic scale. (*Microsoft Excel*)

9. Van uitstel komt efficiëntie. (*H.B. Akkerman*)
   Ad 1. Geldt alleen als er een deadline is. (*M. Lenes*)
   Ad 2. En vice versa.
   Ad 3. Geldt niet voor zonnecellen.

10. There is a negative correlation between the amount of time needed to prepare scientific publications and the time available to do experiments.

11. With four parameters you can fit an elephant. Fitting the elephant becomes much easier when the fridge-occupation parameter is set to zero for giraffes.